International Mathematics and Science Olympiad (IMSO) for Primary School 2007

Jakarta, November 11-17, 2007

INSTRUCTIONS:

* Write down your name and country on every page.

* Answer all 13 questions in English.

* You have 90 minutes to work on this test.

* Write down your answer and the explanation in English in the space below the question.

* Use pen to write your answer.

* Use pencil only to draw figures.

1. A store has a big sale. For every 2 shirts purchased at a regular price, a third shirt can be bought for 10,000 rupiahs. Mr. Bendot has bought twelve shirts for 1,200,000 rupiahs. What was the regular price for one shirt?
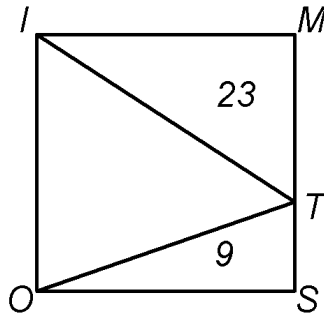
   Answer:

Name : ....

Country : ....

2. Starting from point A, Ali runs 500 m eastward. Then he runs westward for another 750 m. Then he runs eastward again for 350 m, turns back and runs westward again for 450 m. How far is he from point A at the end of the run?

Answer:

3. In the figure, $IMSO$ is a square and T is a point on the side MS. The triangle IMT has an area of 23 cm^2 and the triangle TSO has an area of 9 cm^2. What is the length of a side of the square?

Answer:

4. David gave Sita half of his candies. Sita gave John half of the candies that she received from David. John kept 8 of those candies and gave the remaining 10 to Sheela. How many candies did David have originally?
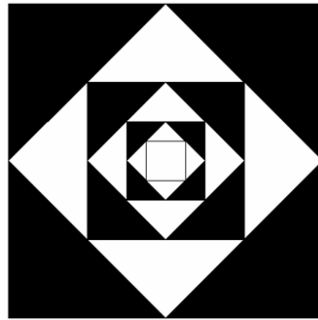
Answer:

5. In each of the first six tests, Brad's mark is always 4 points higher than Jim's. But in each of the next four tests, Jim's mark is always 1 point higher than Brad's. What is the difference between their average marks of the ten tests?

Answer:

Name : ....

Country : ....

6. In the figure, every vertex of a smaller square is the middle of a side of the larger square. The total area of the shaded parts is 21 cm^2. What is the total area (in cm^2) of the unshaded parts?

Answer:

7. The number of parrots in forest A decreases by 120 per year, while the number of parrots in forest B increases by 80 per year. There were $7,340$ parrots in forest A in the year 2000 and $4,200$ parrots in forest B in year 2003. In what year will the number of parrots in forest B start to exceed the number of parrots in forest A?

Answer:

8. The design given below is made up of a number of semi circles. The horizontal diameter of the circle is cut into three equal lengths. If the area of the large circle is 6 m^2, what is the area (in m^2) of the shaded part?
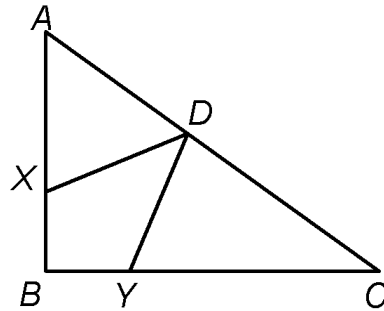

Answer:

9. Rudy is given three positive whole numbers by his teacher and is told to add the first two and then multiply the result by the third. Instead, he multiplies the first two and adds the third to the result. Surprisingly, he still gets the correct answer which is 14. How many different possible values could the first number be?

Answer:

10. In the figure, ABC is a right triangle, $AX = AD$ and $CY = CD$. What is the measure of $\angle XDY$ (in degrees)?

Answer:
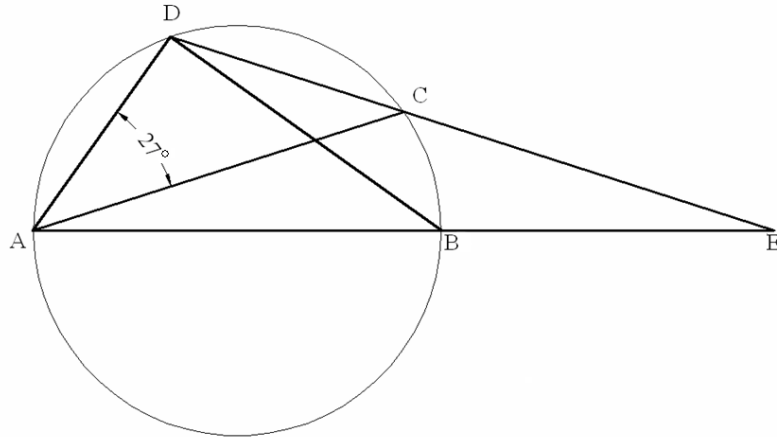
11. Given three numbers. If each number is added to the average of the other two numbers, the results are 65, 69 and 76. What is the average of the three numbers?

    Answer:

12. In the figure, AB is a diameter of the circle, $BD = BE$ and $\angle DAC = 27^o$. What is the measure of $\angle ACD$ (in degrees)?

Answer:

Name   :   ....

Country   :   ....

13. Ahmad and George took a circular route of 7 km that starts and ends at the same point. They started at the same time, took the route in opposite directions, and finished at the same time. Ahmad walked at a constant speed all along the route. George walked at a constant speed for the first 3 km then increased his speed by 7 km/hr, and kept this constant speed for the remaining distance. They met only once during the walk, that was, when Ahmad had covered 4.5 km of the distance. How many hours did it take them to finish the 7 km distance?

Answer: